AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (Currently Amended): An image processing apparatus comprising:

a programmable image processing unit which processes image data ~~as a visualized image~~, the image data represented by a digital signal generated based on an image, and allows realization of a plurality of image formation operations;

an image data storage unit that stores the image data;

an image data storage management unit which manages access to said image data storage unit ~~section~~; and

an image data transmission management unit which manages a transmission of the image data between a data bus transmitting the image data and [[a]] said programmable image processing unit used for the image processing ~~conducted by said image processing unit~~,

wherein said programmable image processing unit includes: ~~having,~~

a SIMD (Single Instruction stream Multiple Data stream) type data operation unit;

a plurality of memories used for the image processing conducted by said SIMD type data operation unit;

a plurality of memory controllers ~~controller~~ configured to control ~~controlling~~ said plurality of memories;

a memory switch configured to selectively connect ~~controlling connection of~~ said plurality of memories with said data operation unit;

a plurality of data buses configured to input and output ~~for inputting and outputting~~ the image data;

a bus switch configured to control a ~~controlling~~ connection between said plurality of data buses and said data operation unit; and

at least one auxiliary operation unit which assists said data operation unit.

Claim 2 (Currently Amended): The image processing apparatus according to claim 1, wherein said plurality of memory controllers ~~controller~~ and said memory switch selectively connect at least one of ~~any one or more memories out of~~ said plurality of memories to said data operation unit, and thereby change a memory capacity allotted to each image formation operation among the plurality of image formation operations.

Claim 3 (Currently Amended): The image processing apparatus according to claim 1, wherein said plurality of memory controllers ~~controller~~ and said memory switch control said plurality of data buses and change an image data transfer width allotted to each image formation operation among the plurality of image formation operations.

Claim 4 (Currently Amended): The image processing apparatus according to claim 1, wherein ~~a plurality of said~~ at least one of said at least one auxiliary operation unit ~~units are provided and at least one of said auxiliary operation units~~ has a non-SIMD type architecture ~~constitution~~ configured to execute ~~for executing~~ a consecutive operation processing.

Claim 5 (Currently Amended): An image processing apparatus comprising:

a programmable image processing means for processing image data ~~as a visualized image~~, the image data represented by a digital signal generated based on an image, and allows realization of a plurality of image formation operations;

an image data storage means for storing the image data;

an image data storage management means for managing access to said image data storage means ~~section~~; and

an image data transmission management means for managing a transmission of the image data between a data bus transmitting the image data and [[a]] said programmable image processing means used for the image processing conducted by said image processing means,

wherein said programmable image processing means includes: ~~having,~~

a SIMD (Single Instruction stream Multiple Data stream) type data operation means;

a plurality of memories used for the image processing conducted by said SIMD type data operation means;

a plurality of memory controllers ~~controller~~ controlling said plurality of memories;

a memory switch selectively connecting ~~connection of~~ said plurality of memories with said data operation means;

a plurality of data buses for inputting and outputting the image data;

a bus switch controlling connection between said plurality of data buses and said data operation means; and

at least one auxiliary operation means which assists said data operation means.

Claim 6 (Currently Amended): The image processing apparatus according to claim 5,

wherein said plurality of memory controllers ~~controller~~ and said memory switch selectively connect at least one ~~any one or more memories out~~ of said plurality of memories to said data operation means, and thereby change a memory capacity allotted to each image formation operation among the plurality of image formation operations.

Claim 7 (Currently Amended): The image processing apparatus according to claim 5, wherein said plurality of memory controllers ~~controller~~ and said memory switch control said plurality of data buses and change an image data transfer width allotted to each image formation operation among the plurality of image formation operations.

Claim 8 (Currently Amended): The image processing apparatus according to claim 5, wherein ~~a plurality of said~~ at least one of said at least one auxiliary operation means ~~are provided and at least one of said auxiliary operation means~~ has a non-SIMD type architecture ~~constitution~~ for executing a consecutive operation processing.

Claim 9 (Currently Amended): An image processing method for processing image data represented by a digital signal based on an image configured to output ~~to allow outputting~~ the image data ~~as a visualized image~~ on a programmable image processing unit, the programmable image processing unit comprising:

a SIMD type data operation unit,

a plurality of local memories used for an image processing conducted by the SIMD type data operation unit,

a plurality of memory controllers ~~controller~~ configured to control ~~controlling~~ the plurality of local memories, and

a memory switch configured to control a ~~controlling~~ connection of the plurality of local memories, and configured to allow ~~allowing realizing~~ a plurality of image formation operations, the method comprising the step of:

selectively connecting the plurality of local memories to said data operation unit by using the plurality of memory controllers ~~controller~~ and the memory switch thereby changing a memory capacity allotted to each image formation operation among the plurality of image formation operations.

Claim 10 (Currently Amended): An image processing method for processing image data represented by

a digital signal based on an image configured to output ~~to allow outputting~~ the image data ~~as a visualized image~~ on a programmable image processing unit, the image processing unit comprising:

a SIMD type data operation unit,

a plurality of memories used for an image processing conducted by the SIMD type data operation unit,

a plurality of memory controllers ~~controller~~ configured to control ~~controlling~~ the plurality of memories,

a memory switch configured to selectively connect ~~controlling connection of~~ the plurality of memories with said data operation unit,

a plurality of data buses configured to input and output ~~for inputting and outputting~~ the image data,

a bus switch configured to control a ~~controlling~~ connection between the plurality of data buses and the data operation unit, and

an auxiliary operation unit configured to assist ~~for assisting in~~ the data operation unit, the method comprising the step of:

controlling said plurality of data buses and said plurality of memories by using said plurality of memory controllers ~~controller~~ and said bus switch thereby changing an image data transfer width allotted to each image formation operation among the plurality of image formation operations.

Claim 11 (Currently Amended): A computer readable medium for storing instructions, which when executed by a computer, causes the computer to perform an image processing method for processing image data represented by a digital signal based on an image configured to output ~~to allow outputting~~ the image data ~~as a visualized image~~ on a programmable image processing unit, the programmable image processing unit comprising:

a SIMD type data operation unit,

a plurality of local memories used for an image processing conducted by the SIMD type data operation unit,

a plurality of memory controllers ~~controller~~ configured to control ~~controlling~~ the plurality of local memories, and

a memory switch configured to control a ~~controlling~~ connection of the plurality of local memories, and configured to allow ~~allowing realizing~~ a plurality of image formation operations, the method comprising the step of:

selectively connecting the plurality of local memories to said data operation unit by using the plurality of memory controllers ~~controller~~ and the memory switch thereby changing a memory capacity allotted to each image formation operation among the plurality of image formation operations.

Claim 12 (Currently Amended): A computer readable medium for storing instructions, which when executed by a computer, causes the computer to perform an image processing method for processing image data represented by a digital signal based on an image configured to output ~~to allow outputting~~ the image data ~~as a visualized image~~ on a programmable image processing unit, the image processing unit comprising

a SIMD type data operation unit,

a plurality of memories used for an image processing conducted by the SIMD type data operation unit,

a plurality of memory controllers ~~controller~~ configured to control ~~controlling~~ the plurality of memories,

a memory switch configured to selectively connect ~~controlling connection of~~ the plurality of memories with said data operation unit,

a plurality of data buses configured to input and output ~~for inputting and outputting~~ the image data,

a bus switch configured to control a ~~controlling~~ connection between the plurality of data buses and the data operation unit, and

an auxiliary operation unit configured to assist ~~for assisting in~~ the data operation unit, the method comprising the step of:

controlling said plurality of data buses and said plurality of memories by using said plurality of memory controllers ~~controller~~ and said bus switch thereby changing an image data transfer width allotted to each image formation operation among the plurality of image formation operations.

Claim 13 (New): A computer readable medium for storing instructions according to Claim 9, wherein said SIMD type data operation unit does not access an external memory outside of the programmable image processing unit.

Claim 14 (New): A computer readable medium for storing instructions according to Claim 11, wherein said SIMD type data operation unit does not access an external memory outside of the programmable image processing unit.

Claim 15 (New): An image processing apparatus according to Claim 1, wherein said at least one auxiliary operation means performs an IIR (Infinite Impulse Response) type filter image processing.

Claim 16 (New): An image processing apparatus according to Claim 5, wherein said at least one auxiliary operation means performs an IIR (Infinite Impulse Response) type filter image processing.

Claim 17 (New): An image processing apparatus according to Claim 1, wherein said bus switch is configured to change a bus width of said plurality of data buses allotted to said image formation operation executed in said data operation unit.

Claim 18 (New): An image processing apparatus according to Claim 5, wherein said bus switch is configured to change a bus width of said plurality of data buses allotted to said image formation operation executed in said data operation means.

Claim 19 (New): An image processing apparatus according to Claim 1, wherein said memory switch is configured to adapt a data format for said image data processed by said data operation unit.

Claim 20 (New): An image processing apparatus according to Claim 5, wherein said memory switch is configured to adapt a data format for said image data processed by said data operation means.